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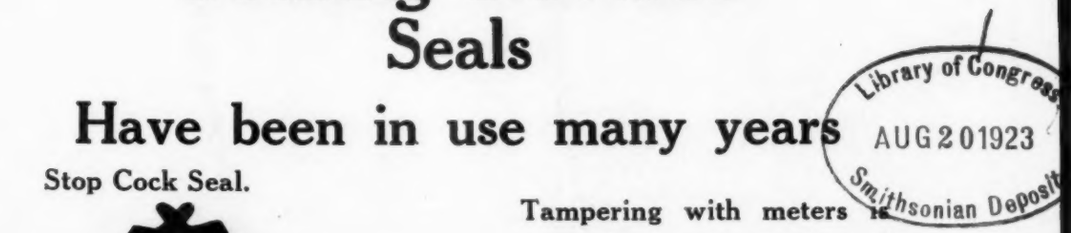

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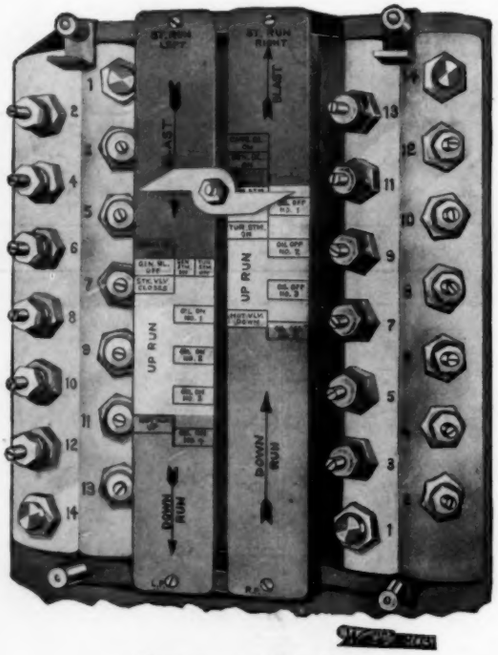

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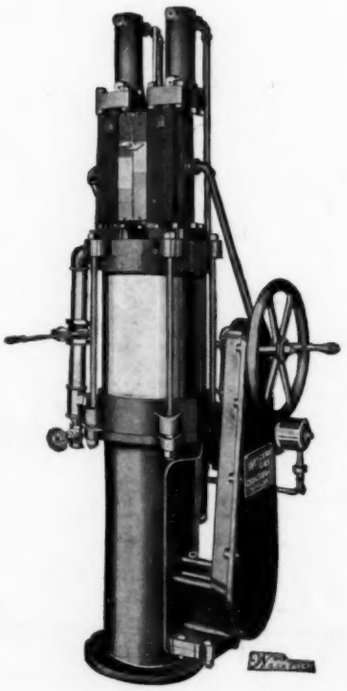

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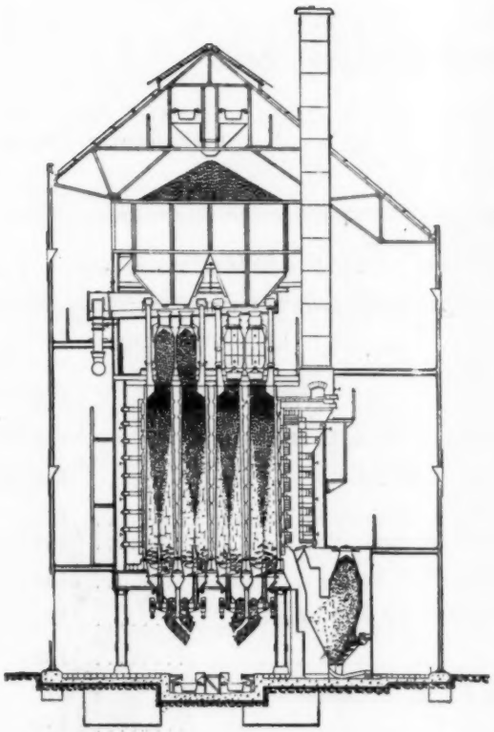

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American Gas Journal

SIXTY FIFTH YEAR

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GAS JOURNAL

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Coal Distillation by the Moscicki Low Temperature Process

A process in which heat economy is high, and valuable by-products are obtained

R. Moritz

The article that is reproduced here from the original French describes a little known but interesting low temperature distillation process, which was invented by the Polish engineer Moscicki. The author of this article learned of the process and the details of its operation on a visit to Poland. It possesses certain interesting features, having a high heat economy and producing an oil that has lubricating properties. The article appeared originally in Chemie et Industrie.

IT is known that the distillation of coal at high temperatures produces hydrocarbons, which belong to the cyclic series, hydrocarbons of the benzol or toluol type, while in the distillation of coal at low temperatures, hydrocarbons of the non-cyclic series are obtained. Furthermore, the low temperature, at which the process is carried out, prevents the burning of the products of distillation with the result that a greater proportion of them is obtained and a lesser percentage of carbon is produced in the heating. The hydrocarbons that are recovered in the low temperature distillation process, are almost all non-cyclic in composition, and a good proportion of them possess lubricating properties, similar to those of the lubricating oils, that are distilled from petroleum.

Compositions of Various Low Temperature Tars.

It will perhaps be interesting to append the following tables, which show the characteristics of low temperature tars obtained from different kinds of coal.

	Kind of Coal.			
Crude Coal.	Flaming Gas Coal.	Lean Coal.	Gas Coal.	Lignite Briquettes.
Density	1.052	1.068	1.066	1.026
Benzol insoluble matter, %	0.954	0.11	1.60	2.77
Ash, %	0.12	0.18	0.14	0.13
Moisture, %	3.00	5.8	4.5	7.3
Oil by gentle distillation, %	56.37	67.50	57.00	56.2
Pitch, %	40.00	26.30	38.3	34.8
Distilled Products.				
Density	1.001	1.030	1.008	1.013
Viscosity at 20° C.	4.31	9.47	3.11	11.16
Flame temperature °C.	93	112	85	115
Burning point °C.	108	130	98	135
Congelation temperature. °C.	-5	4	-6	7
Acid oil. %	36	44	32	28
Pitch.				
Softening temperature. °C.	87	95	83	79
Solubility in alcohol. %	58	60	76	73.5
Ash	0.47	0.55	0.20	1.24
Paraffine.				
Crude pariffine in tar	0.345	17.0	0.5	8.5
Fusion temperature	34		54	57
Lubricating oil in tar. %	34.8	40.5	34.3	28.4
Viscosity at 20°C.	4.35		4.91	6.7
Flame temperature at °C.	15.4	17.3	148	152

The Principle of the Moscicki Process

The Moscicki process consists in heating or rather reheating the tail-end part of the gas, that is produced in the distillation process, to a temperature of about 450 degrees C. Then the gases that are produced by this treatment are used as a heating medium to heat up the mass of coal to a distillation temperature.

gases penetrate into the center of the mass of the fuel, which is being distilled. Thus, when the combustible that is being distilled is a solid, whose mass holds together, a simple tower, which is well insulated to conserve the heat and whose cross-sectional area is properly proportioned, is used for the distillation. The solid fuel is fed into the tower either intermittently or in a continuous stream through the top, and the treated combustible may be removed at the bottom in the same manner. When liquid

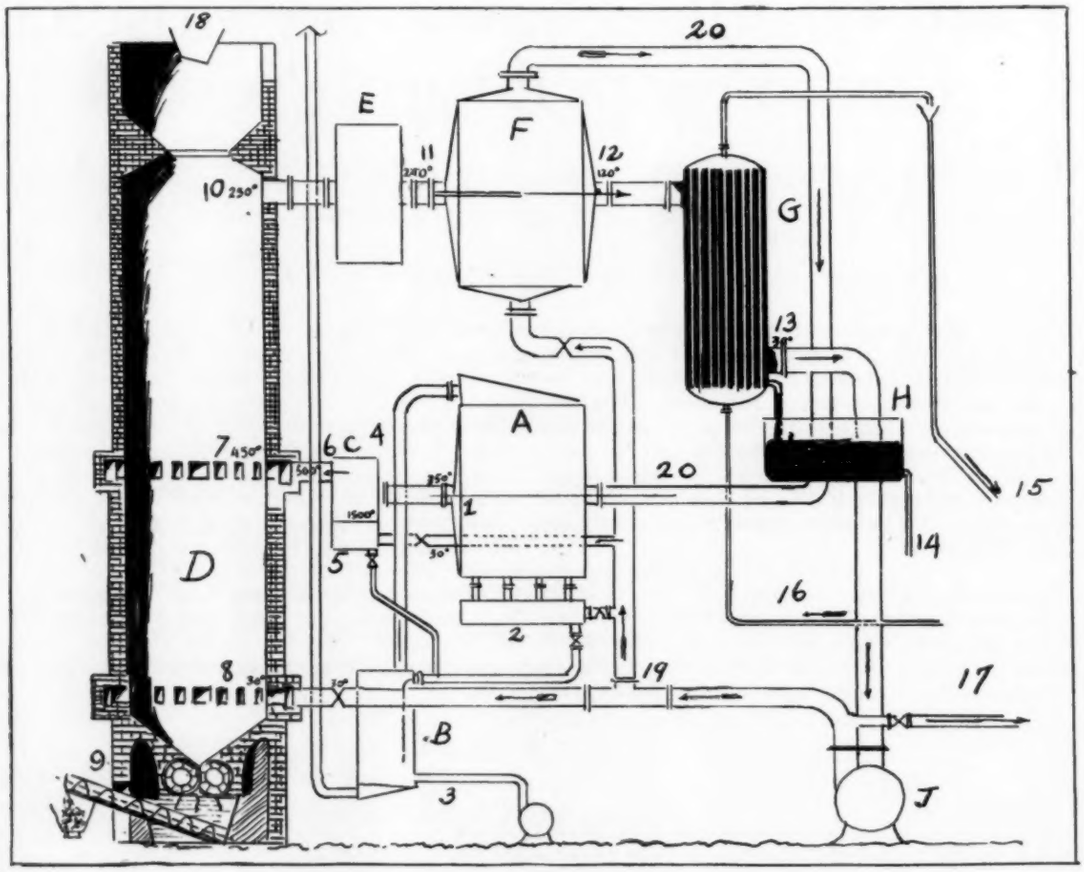


Diagram of Apparatus.

Apparatus Used in the Process

The essential pieces of apparatus in the installation are a re-heater for the gas, a distillation column and a condensing system, the whole arrangement being combined with heat exchangers, which economize the quantity of coal and gas that is used in the distillation process. The plant differs in details of its arrangement and construction in accordance to whether the raw fuel is coal, lignite or petroleum, but the aforementioned essential elements remain the same. Inasmuch as the heat in the gas is fed right into the very mass of fuel in the distillation apparatus, the construction of the same is not influenced by the peculiar properties of the combustible and neither by the necessity of having the hot fuels are being treated, the same tower can be used, but it is filled with tower packings or else a tower constructed with plates may be employed. The gas which furnishes the heat for the distillation, is introduced at that point in the tower which is most advantageous for the distillation.

Arrangement of Distillation

The arrangement of the apparatus is seen in the accompanying diagram. The distillation apparatus is seen at D. The coal or fuel is fed into the column at 18 and the coke is removed at 9. A small screw conveyor removes the coke continuously. Air, which is blown into the burners at 2 and 5 by a fan through

the pipe 3 and through the heat exchanger B, is preheated in B by the burnt gas from A, the gas superheater, being fed to B through the pipe 4. The gas superheater A is heated by the burner 2 with gas, which is drawn from the pipe 19 and is generated in the tower D. It is seen that the superheated gas leaves the superheater through the pipe 1 at a temperature of 350 degrees C and first passes through the heater C before it enters the tower at 7. Its temperature at this point is 450 degrees. It is also observed that the entrance port 7 is located about midway up the distillation column. At 8 in the tower there is introduced cool gas at a temperature of 30 degrees C. This gas comes from the condenser G and passes through the blower J. A part of the gas only goes back to heat the tower, the majority of the same going to the gas tank through the pipe 17.

It is seen that the gas, which passes through the blower J, is also used to feed the burners 2 and 5, while the gas that is superheated in A comes directly from the heat exchanger F. At 10 in the tower the evolved gases escape at a temperature of 250 degrees C and pass through first the gas filter E and the heat exchanger F. When they leave F through the pipe 12 to enter the condenser G, their temperature has been reduced to 120 degrees C. In the condenser, which is of the closed type,—the condensing water entering through 16 and leaving at the top through the pipe 15,—the temperature of the gases is further reduced to 30 degrees C. The condensed oil is caught in the box H and removed through the pipe 14.

Operating Details

In running the installation on liquid fuels, which distill almost entirely, the fuels are brought almost to the temperature at which distillation takes place by preheating them with the products of the distillation in the heat exchangers. When solid fuels are used, which leave behind after the distillation quite an appreciable proportion of coke, the heat in the coke, which is absorbed by the last portions of the gas distilled from the fuel, is recovered in this manner. Then the temperature of this residual gas is brought to such a point that it is sufficient for the reheating of the combustible and the distillation is carried out by means of the very gas that is derived from the combustion of a part of the residual gases.

The vapors, which are distilled, come over at atmospheric pressure and at a temperature, which is lower than the boiling point, due to the fact they are carried along by hot gases of high molecular weight. The condensation of these vapors may be carried out by a fractional system, which has been devised by the inventor of this apparatus.

Economic Advantages of the Process

A great advantage of this method of low temperature distillation rests in the fact that all the apparatus can be constructed of sheet metal or cast iron and occupy little room even for a large production. They can be made very tight. Furthermore, the consumption of fuel for the purpose of heating the apparatus and conducting the distillation is very small. For example, in the distillation of certain gas coals, the quantity of fuel that must be burnt up in order to keep the operation going amounts to only 5 or 6 per cent. Furthermore, the operation may be conducted in a continuous manner and the coke that is drawn from the distillation column will be almost cold. For these reasons the loss of fuel through combustion must be at a minimum.

The arrangement of the different pieces of apparatus in the installation is such as to necessitate the very minimum of labor. In fact this is limited to casual watching of the apparatus in operation, the charging of the coal into the distilling column and the removal of the coke after distillation. It will be seen from the diagram that the temperature of the gases is comparatively low and consequently the heat refractory linings, etc., have a very long life. The upkeep of the apparatus is accordingly very small.

Applications of the Method.

The Moscicki process is interesting to those plants that wish to produce distillation products from the dry decomposition of coal that are similar in properties to the ones that are obtained by the distillation of petroleum. It is also interesting to those plants that produce metallurgical coke. By this process there are obtained oils and other products of distillation of high value and on the other hand a semi-coke, which is mixed with unburnt coal. This mixture may be distilled by any one of the high temperature distillation processes. The ordinary products of coal distillation are obtained in this manner, but in addition thereto a residual coke which is of the high quality of the best metallurgical coke.

NO NATURAL GAS FOR CARBON BLACK

J. B. Dillon

After a three-year fight to obtain permission for the use of natural gas in the manufacture of carbon black, the Midland Carbon Company, the Occidental Oil and Gas Company, and the Wyoming Dehydrating Company have withdrawn from the State of Wyoming.

Asserting that fully ninety-five per cent of the gas was wasted in the manufacture of carbon black, a law was passed in 1919 which specifically states that natural gas must not be used in the manufacture of carbon black; that the gas supply is needed to maintain the rich oil fields. Since this law was passed many efforts have been made to have it repealed or amended, but without success, although the interior department allowed certain oil men to pipe "dry gas" from their absorption plants, to Casper, Wyoming, and use it for fuel.

It would seem that ways and means can be set up to reclaim the pigment at the oil companies plants and without any evasion of the law carbon black can and should be obtained and not throw away this residue as if it was so much coal ashes.

House Heating by Gas

Its development in Providence, R. I., known as a large oil port

J. E. Bullard

How house-heating by gas is making great strides in a city which is in a particularly favorable situation to use oil in the place of coal is told in the following article. It is not a question of the cost of the fuel but the increased benefits that are derived from its use. That gas can make headway against severe competition with both coal and oil in a community which is one of the largest oil ports on the Atlantic Coast, seems to show that people, once they learn the great advantages that are gained by its use are eager to employ gas even for heating the home and business places, regardless of the cost.

PROVIDENCE is one of the largest oil ports on the Atlantic Coast. The Standard Oil Company has a large refining plant at East Providence. The Gulf Refining Company, the Texas Oil Company, the Mexican Petroleum Company and the Atlantic Refining Company all have big receiving stations. The Standard and all the others except the Atlantic have stations on the water front and receive their oil by boat.

In the city there are many concerns pushing the sale of oil burners both for industrial and domestic heating purposes. Domestic oil burning equipment for domestic use is being sold installed all the way from $50 or even less to $500 and more. It is said that one company alone has made more than 1,200 installations in the city.

The use of oil as fuel was given a great impetus last winter when it was difficult to buy coal and when it was sometimes even more difficult to burn that which had been bought. The oil companies have been able to make very prompt deliveries of oil at all times. Oil ordered for domestic use in the morning is usually delivered by at least some of the companies the afternoon of the same day.

Oil suitable for use in the furnaces and boiler of the heating plants of residences was sold at ten cents or a cent or two less per gallon last winter. Both the oil and the burners were advertised in the newspapers.

Gas House Heating Faces Severe Competition

Under these conditions it might seem at first sight that it would be hard to sell gas house heating in the city. However, experience shows that heating with oil means a somewhat higher fuel bill than does heating with coal. Heating with oil does have the advantages of very much less labor, a clean cellar and the possibility of a uniform heat day and night. It makes it possible to secure considerably more usable heat from a plant of a given capacity.

But oil heating is not in all respects as satisfactory as some of the most particular people demand a heating plant to be. Some of the systems require a good many auxiliaries such as gas pilot lights, electric motors and the like. If the electric current goes off where one of these systems is in use, there is no heat until the current comes back on again.

Up to the spring of this year the Providence Gas Company had paid no serious attention to the development of a gas house heating load. Nevertheless, a number of house heating installations were made at the insistence of the consumers.

Cost of Heating House with Gas

For example, one day a man came in to make inquiries about house heating. He was shown that 33,000 cubic feet of gas would prove equivalent to a ton of coal. This figured up to approximately twice the cost of coal. But this consumption of gas meant a warmer house at night and probably more rooms in the house heated, for experience shows that people do keep their houses warmer at night and usually heat more of the house as soon as they begin to us either oil or gas for heating purposes.

Absolutely no effort was made to convince this man that gas would prove more satisfactory than coal but he was shown that it would cost him much more than coal. He did his own figuring. He calculated how much it was costing him to have his ashes removed, what he was paying to a man to come to his house each day and take care of the furnace fire, and with other expenses that could be properly added such as fuel space, damage to the decorations in his home and the like, he himself figured up costs that showed that gas would really be just as cheap to burn as coal when all things were considered.

It is well to bear in mind that this man figured these costs himself. They were not pointed out to him by the gas company. He realized the great advantages of gas heating and he wanted to prove to himself that gas heating was not an extravagance but an economy.

Several Installations Made

As a result of a number of people coming into the office just as this man did, several house heating plants, steam, hot water and hot air were changed over to gas heating by installing gas burners in the old furnaces or boilers. In every case the consumer was not only satisfied with the results but also with the price.

It has been thoroughly demonstrated in Providence that there are a good many people who are very willing to pay the price of gas heating to secure the many advantages of such heating and there is plenty of evidence that the intensive manner in which oil burners have been pushed has been re-

sponsible in no small part for the demand for gas for house heating purposes. The gas heating installation does not cost so much as a rule as an oil heating installation and the cost of operating it, though higher, is not so much higher that it outweighs the advantages of burning gas.

In Providence, and the district served by the Providence Gas Company some gas heating installations have been made with new equipment. One of these is a motion picture theatre installation and the man who is paying the gas bill in this case is very enthusiastic about it.

For some ten years, Rhodes Casino, a dance hall on the outskirts of the city has been heated with gas. This, in fact, was one of the first installations of the Rector system in Rhode Island.

Heating Business Places

There are a number of installations of heating systems in stores, offices and the like. The owner of one small building right in the shopping district installed a system which is a development from the old Rector system. In this case a gas meter was installed for each tenant who paid for the gas he used. These tenants were enthusiastic about the system.

One very great advantage it had to many of them was that they could work in the office as long as they wished at night and not be cold because the fire in the central heating plant had been banked. Any office could be kept as warm as desired and warm any and all times it was desired to have it warm.

Before the price of coal advanced to its present price but when gas sold at a lower price than it sells for today, there were people who wanted to use gas in Providence but who felt it too expensive. Some trial house installations were actually made and were taken out because the price was too high. Today the price of gas does not count so much as it did in those days. There seems to be a very real desire on the part of a very large number of people in Providence to get away from the uncertainty and the annoyance of using coal.

This coming winter more attention is to be given to gas house heating. In figuring estimates of cost 33,000 cubic feet of gas is allowed for every ton of coal burned in past winters. If the house was maintained at the same temperature as it was with coal, if no more of the house was heated and if the house was kept no warmer at night than it was with coal, if the gas fire was started no earlier, and kept going no later in the heating season, if it was not started everytime there was a little chill in the house regardless of the time of the year, it would not be necessary to make so generous an allowance for gas for heating purposes. Experience, however, at least the experience in Providence, shows that people do use the gas fire a good deal more than they did the coal fire, and that they keep the house at a higher average temperature for the twenty-four hours of the day.

It certainly seems to be much better to estimate the gas consumption plenty high enough rather than a little low. If it is estimated high, the consumer is going to be satisfied with the bill. If it is estimated low, he is not going to be.

Winter Campaigns Planned

The Pawtucket Gas Company after making a very thorough study of gas house heating has planned a house heating campaign for the coming winter and in a combination gas and electric home which was open to the public for three weeks in June, one of the features was a gas-fired steam boiler in the basement. The very small size of this gas fired boiler attracted much attention to it and caused a lot of comment.

In and around Providence, it is no longer a case of whether or not the gas companies want to sell gas for house heating. The people are already demanding it and in self defense if for no other reason the companies have to make a study of the situation and be prepared to take on the load. Neither in Providence, nor in Pawtucket up to the present time have any special house heating rates been offered. As a matter of fact it is a question whether the public service commission would approve of any special rates. A study of the features of this load seem to indicate that if any special rates were offered it would be a case of making them higher rather than lower than the rates offered for the same quantity consumption of gas in cases where the load factor is higher than it is in house heating. Therefore, the probability is that all house heating will continue to be sold on the present regular rates and, if any changes are made, a readiness to serve rate system will be adopted.

NEW COKE EXTRACTOR.

Interesting Device Installed at Newest British Gas Works in Connection With Vertical Retorts

Major Johnstone-Taylor.

The new gas works just completed at Carlisle, England, although not of great size, nevertheless represents the last word in British gasworks construction and contains several interesting features, one of which is the mechanical operated coke extractor at the base of each vertical retort.

The mechanism has been designed to operate for long periods without stopping and at the same time give access for the cleaning and inspection of the retorts. Referring to the illustration showing the extractor in section, the extractor proper consists of a helical worm, which resolves in a casing below the retort, the angle of the worm corresponding to the angle of repose of the coke. The worm itself is mounted on a vertical spindle. It is made in two halves, the lower one being actually secured to the shaft, but the upper one is loose on the end of the shaft.

Although thus divided, the construction is such that the helix is continuous, as the top half is driven by the bottom half. The object of this arrangement is to permit of the top section being partially rotated on the shaft in order to disclose an aperture for inspection, and is only a mere detail.

A shaft passes downwards through a stuffing box and is revolved by a worm gear, operated by a ratchet and pawl mechanism. The driving gear is situated at the end of the retort house and is arranged to give uniform reciprocating movement to all the pawls, but the driving mechanism for each extractor is self contained and enclosed in a gear box which may be removed without disturbing the extractor or any of the retort fittings.

In addition, it is provided with an overload release which operates in the event of any obstruction to the revolution of the extractor.

The blade of the extractor, being cut away at the top a core of coke, lies within the helix and the action of the extractor is positive, the coke being free to leave the retort when the plane is rotated away from the coke. It is discharged without breakage into a chamber, provided with a sealed outlet suspended from the extractor casing.

The driving gear operates all the extractors simultaneously and consists essentially of a steel framework carrying a system of fast and loose pulleys, belt, spur and double helical gearing giving motion to a reciprocating crosshead by means of a crank. Electric motor drive in duplicate is provided.

AMERICAN GAS ASSOCIATION SOUNDS WARNING

Issues Bulletin on the Hard Coal Situation

The situation may be summed up briefly as follows:

The anthracite wage agreements expire September 1. The bituminous wage agreements expire April 1, 1924. A four weeks' conference between the United Mine Workers and the anthracite operators came to an end at Atlantic City last week without any agreement and all negotiations were called off.

The vital issue at stake was the check-off. John L. Lewis, president of the United Mine Workers, stood firm for the check-off. The operators stood firm against it. The result was a dead-lock and an abrupt termination of negotiations. Although every possible effort to prevent a shutdown of the mines will be made by the President and the Federal Coal Commission, it is not believed that such efforts will discourage or stop Lewis from ordering a strike of the hard-coal miners on September 1. Furthermore, it is the conviction of those who are studying the situation that the hard-coal owners will not attempt to break the strike.

Of far greater importance, however, is the possibility of a strike of the bituminous miners. Although the wage agreements in this field do not expire until April, 1924, it is unwise to assume that a way will not be found to break these contracts in case a complete cessation of all union mining is deemed necessary by the United Mine Workers to win their battle. It is altogether likely that the present trouble may develop into a fight that will involve the miners in the soft-coal regions as well as the anthracite field.

Lewis has already established the check-off system in the bituminous districts and he is determined to get it in the anthracite field. Should there be a strike of soft-coal miners later on, this check-off plan will be of great aid in helping them to finance their fight, just as the check-off in the bituminous mines at present will supply the necessary funds for the union to carry on a hard-coal strike.

The information which serves as the basis of this service letter has been obtained from the same source that enabled the Association in January of last year to predict the coal strike which took place later that year. We have always urged our member companies to be prepared for any possible fuel emergency. The facts in the present situation permit of no optimistic view regarding the future supply of fuel and we therefore urge all members to immediately lay in stocks and take all necessary precautions in order that they may be prepared to meet a possible emergency.

If a strike of the hard-coal miners is called, it will come coincident with the expiration of the anthracite agreements, September 1. Member companies are therefore urged to act without delay and to secure and store coal to their maximum capacity, in the few weeks that remain.

SUCCESS SECRETS

Lester G. Herbert

Onst there wuz a Man who went into Bizness for hisself. He thot that it wuz goin' to be grate fun to be his own Boss an' to have all the time off that he Liked. Sew he would get down to his place of bizness Any Ole Time in the morning, for he sed: "It wuz no one's affair but his own."

He would take a kupple of hours off for Lunch an' would leave Early in the afternoon. As a bizness man he wanted to show peppul that he wuz Sum Guy. Sew he would play Golf at the Kountry Klub or go motoring an' take his dinner at a Expensive hotel. In fac' he got to trotting with a faster Krowd than he could keep up with in Point of Kash. An' after a while he begun to get worried.

Did he buckle down to bizness? Did he study his Market Reports? Did he read his Trade papers? Did he go to Bed early an' be up betimes? Did he study his own Organization? Did he aim to kut down overhead an' to increase the volume of bizness? Did he encourage Quick turnover? Did he buy cautiously? Did he advertise kleverly? Did he kut out his kiddin' the public as to his ability to be a man of leisure most of the time?

HE DID NOT! He noticed that peppul begun to treat him with less deference. His klerks were often Insolent. His Kreditors got impatient an' weren't sew anksus for orders. An' won day the papers karried a announcement that he had filed a petition in bankruptcy. Peppul shrugged their shoulders an' sed, "We expected it. We have never known it to fail that:

"What A Fellow Does When He Is His Own Boss, An' What He Does In His Spare Time Really Show What Sort Of A Guy He Is, Anyway!"

Gas the Smokeless Fuel

The smoke problem and gas as its solution. Rate adjustment and wider use of gas.

Bernard J. Mullaney

Manager Public Relations Department, The Peoples Gas Light and Coke Co., Chicago

In this address, delivered before the National Smoke Prevention Association, Mr. Mullaney gives a clear exposition of the enormity of the losses occasioned by smoke and of the way in which gas can assist in eliminating these losses. It is well to remember that in using gas it is not "the cost of the fuel but the cost of using it" that is important. The effect of arbitrary gas standards and unscientific rates as chief obstacles to the greater use of gas are discussed. Interesting consumption data in Chicago and Grand Rapids are given to show injustice of the flat gas rate.

LIKE the poor of biblical reference, the smoke problem seems to be always with us, as it has been for centuries.

Efforts to stp the nuisance began, practically with the use of coal in London, late in the thirteenth century. Royal proclamations against the burning of coal while parliament was sitting were issued by King Edward I in 1306 and again by Queen Elizabeth. In 1648 Londoners petitioned parliament to forbid the importation of coal from Newcastle and similar outbursts against some recurred from time to time.

Modern smoke prevention efforts date from 1819 when a British parliamentary committee reported that smoke prevention was practicable. In the century since, more headway has been made against the nuisance than was made in the previous five centuries, but the aggregate of it seems paltry when we take a soot bath in almost any of our industrial cities. The smoking chimney has been easily accepted as a sign of prosperity instead of the carelessness (not to say almost criminal waste) that it is, much as eating pie with a knife has been sometimes accepted as the mark of a "plain, old fashioned man of the people."

Favoritism in Gas Rates a Smoke Factor

The smoking chimney is under sentence to follow the stage coach and the horse and buggy—inevitably. Accelerating its going is important service to industrial efficiency and economy, as well as to community cleanliness, comfort and health. To this end, there are indirect ways of accelerating that are even more effective than the direct methods now mostly employed.

Make your gas companies stop serving the bridge club and cabaret classes at the expense of the working and baby-raising classes, and you will be well on your way to ending the smoke nuisance forever.

Do this, and as a by-product you will do more than anybody else has yet done toward stopping our greatest waste of natural resources—our highest economic crime—namely; the burning of raw coal for general commercial, industrial and domestic purposes.

The annual coal bill of the country is put at $27 for every man, woman and child—roughly $3,000,000,000. Engineers estimate that we get for this only about five per cent of the potential usefulness of the coal; but wasteful use, 95 per cent of its energy content is lost.

Some Staggering Smoke Wastes

Then take the wastes with which you smoke specialists are familiar: Waste of unconsumed fuel that goes up the smoke stack; waste in damage to buildings, to fabrics, to home furnishings, to trees and vegetation, to everything that is exposed to the cinders, dust and soot and to the carbon and sulphur compounds of smoke; waste and damage to the comfort and health of human beings compelled to breathe the solid and gaseous constituents of smoke.

The Mellon Institute of Pittsburgh, after careful study of its home town, estimated the annual smoke damage there at $10,000,000. Chicago's annual smoke bill has been placed at $20,000,000; Cleveland's at $7,000,000; Cincinnati's at $6,000,000. Carry the computation through the entire list of cities that have a smoke problem. Add the total to the loss from wasteful use of coal, including the loss of valuable constituents when raw coal is burned, and you get a staggering grand total of billions of dollars—an amount the human mind cannot grasp any more than it grasps the distances astronomers talk about.

The point is that most of this waste is preventable. Making your gas companies get on a fairer rate basis—a basis that will not discriminate against the working man's home in favor of the kitchenette apartment—is a simple and logical place to start prevention.

Chief Smoke Sources—How to Reach Them

You know better than I that the four chief sources of the smoke nuisance are:

(1) Steam locomotives.

(2) High pressure steam stationary power and heating plants.

(3) Low pressure steam and other stationary heating plants (buildings, apartments, residences)

(4) Furnaces for metallurgical, manufacturing and other processes exclusive of boiler power plants.

Electrification of steam railroad terminals may be expected to eliminate source No. 1 in the not distant future. Source No. 2, under the pressure for efficiency and economy in the use of power, will be eventually eliminated by central station electricity, and probably sooner than we think. Sources Nos. 3 and 4, whose combined contribution to the smoke nuisance is variously estimated to be from forty to sixty-five per cent of the total, are therefore major factors in the smoke problem. Stop the burning of coal in its raw state and you will have them by the throat.

Why Gas is Logical Fuel

The scientists say that gas is the only substance ever discovered or invented that will burn. The solids and liquids called "fuels" are converted into gases before combustion. The conversion is almost invariably unscientifically and wastefully done. Since gas and gas alone will burn, why not first effect the conversion scientifically and efficiently and then burn the gas with due regard for correct principles and scientific methods?

The practicability and desirability of using gas-fuel for a thousand industrial purposes and for heating buildings, stores, offices, apartments and homes, scarcely needs discussion. That has been demonstrated—is demonstrated daily—by gas companies all over the country. In point of cleanliness, convenience, flexibility, certainty of supply and of uniform quality—in all the requisites of a perfect fuel—gas-fuel simply has no competitors.

Question of Economy No Obstacle

Neither is it necessary to dodge the question of economy. As the industrial gas department of the Peoples Gas Light & Coke Company (Chicago) says, in this matter of comparative economy: "It isn't altogether the cost of the fuel, but the cost of using it." When the cost of gas-fuel is compared with the others on that basis, gas-fuel holds its own in a multitude of uses; and in another multitude, scientific study and development is steadily lessening the gap between the cost of gas and of the other fuels. Scientific rate-making plus the inventiveness that will be stimulated by it, will complete the job.

Much Smoke Easily Preventable With Gas

But utilization of smokeless gas in this immense industrial and domestic field need not wait for the complete revolution that will substitute gas for all other fuels on a flat first-cost basis. Take the heating of buildings, stores, offices and homes, for example. Much of the smoke from this source is due to forcing the fires in times of extreme temperature or other emergency. If this load alone were carried by gas, as an auxiliary, reduction of the smoke nuisance would be marked. For domestic fires contribute much more to the smoke nuisance than is commonly realized. Some place it as high as fifty per cent, according to locality.

One of the most thorough smoke inquiries of recent times was that made by the British Ministry of Health Committee in 1920-21, of which Lord Newton was chairman. This committee found that smoke conditions in Berlin, Dresden, Frankfort and the industrial cities of the German Rhine and Westphalian provinces were immensely less obnoxious than in comparable English cities. This was said to be due "mainly to the almost complete absence of domestic smoke," thanks to little or no burning of raw coal for domestic purposes in the German cities.

More Gas Opportunities—Less Smoke

Gas burning appliances for domestic heating are already efficient and are steadily improving. If houses and apartments were so built that these efficient appliances could be used in rooms other than kitchens (and sometimes one other room) gas would carry the extra below-zero heating load smokelessly, and economically, and could easily take the place, again economically, of the coal burning heating plant for considerable periods in spring and fall. To achieve this quickly, architects, builders and owners need to be awakened immediately to the advantages of it.

It is noteworthy that the British Governmental committee recommended official non-approval of building plans that lack adequate provision for smoke prevention. Why isn't that worth thinking about for smoke-smothered American cities? What could be more logical and reasonable, as a smoke prevention measure, than insistence upon adequate facilities in new buildings for the use of a smokeless fuel of proved efficiency?

Chief Obstacles to Greater Use of Gas

Chief among obstacles to greater use of this clean, convenient, efficient, smokeless gas-fuel have been and still are:

1. Arbirtrary standards of gas quality, whether candlepower (illuminating) or B. t. u. (heating value) standards.
2. The antiquated, unscientific, flat-rate method of fixing the price of gas to the consumer.

An arbitrary B. t. u. standard—the same standard for a whole state or for widely separated localities—should go the way of the candle power standard which lingered (and still does, in too many places) long after it had been made obsolete and ridiculous by the gas mantle burner for gas lighting.

The cost of manufacturing gas is materially affected by the situation of the manufacturer—accessibility and cost of raw materials (coal, coke, oil) and similar circumstances. Obviously, therefore, the manufacturer should make the kind of gas that he can make to the best advantage, with due regard for manufacturing cost on the one hand and efficiency at the customer's burner on the other.

Antiquated Rate Making Worst Barrier

Antiquated rate making is an even greater obstacle to more general use of gas-fuel. The flat-rate system of the earliest days of the gas industry—so much for a thousand cubic feet of gas, whether you use a thousand or a million cubic feet in a month—is still in effect almost everywhere in this country. Even where there is a so-called service charge or

minimum monthly bill, or a "step-rate" under which, within rigid limitations, the price per thousand decreases as monthly consumption increases, they are only makeshift variants on the flat rate, because they do not take into account certain fundamental facts.

There is more than one distinct and separable element in the cost of supplying gas. There is the cost of the commodity itself, the gas, as made and delivered to the user. Then there is the cost of the "service" which is again separable into the cost of providing plant and facilities for variable and maximum demand, the expenses commonly called "customer" costs, and so on.

Take "customer" costs, for example. Conspicuous among these are certain obvious items of expense, which are the same for serving the customer who uses only a few hundred or a thousand cubic feet of gas per month, as they are for serving the customer who uses 5,000 or 10,000 cubic feet. These items are:

Meter reading	Service piping
Bookkeeping	Service maintenance
Billing	Meter installation
Collecting	Meter maintenance

Gross Injustice of the Flat Rate

Under a flat rate system, those items of "customer" expense are lumped together and are prorated against each thousand cubic feet of gas sold. It is the only way of handling them under a flat rate system. It is obviously an inequitable thing to do when you analyze it.

Compare Customer A, who uses 5,000 cubic feet of gas per month, and Customer B, who uses only 500. The "customer" expense, for meter reading, bookkeeping, billing, etc., on account of B's 500 cubic feet is the same as for A's 5,000 cubic feet; but A pays ten times as much on account of it as B does, when the entire "customer" expense is lumped (as it has to be under a flat rate system) and is pro-rated against each thousand cubic feet of gas sold. Consequently, either B is not paying his fair share of this "customer" expense or A is paying too much; and if B is not paying his fair share (and he isn't when he uses only 500 cubic feet of gas per month) then A is paying a considerable part of what B ought to pay.

Exactly that is happening wherever gas rates are on a flat rate basis, which is practically everywhere in this country; the B's are getting their gas service at the expense of the A's. It is happening to a degree literally undreamed of by the gas using public.

Adds to Price and Restricts Use of Gas

The effect of this obviously is to restrict the use of gas and therefore to restrict its influence upon smoke prevention. The "B" customers escape paying their fair share of the "customer" expense. The "A" customers have to pay it in paying for their greater consumption of gas. This makes the "A" customers pay more for their gas than they ought to—keeps the price up. Consequently, they feel they cannot afford to use gas as freely as they would like to and they go on buying raw fuels and making smoke.

When equitable rate making supplants the inequitable flat rate system, as it must, it will separate the fundamental cost elements and distribute them fairly among the various classes of customers, according to the character and amount of service they respectively require, receive and should pay for. With all "service" charges thus equitably apportioned, gas, the commodity, can be sold like any other commodity, unburdened of all costs except those directly pertinent to the manufacture and distribution of it.

The price of gas will then come down. The gas bills of "A" customers will be lower. When that happens they will feel free to use more gas. Then the well-known principle of volume production—mass production as exemplified in up-to-date American manufacturing—will tend to reduce still further the price of gas for domestic use and industrial heat processes, until the use of raw fuels becomes exceptional and perhaps unlawful.

Demagogues Help Perpetuate the Injustice

You may ask why the gas industry has not bestirred itself more to abolish the unfair flat rate system. Perhaps it has not tried as hard as it should. Perhaps it has been slow in awakening to the injustice of the system. Hard conditions bred by the war taught all of us much that was not realized before. (It took some thousands of years for us to learn that a man's shirt could be made to put on like a coat instead of pulled on over the head.)

Be that as it may, whenever the gas companies have tried to edge away from the flat rate system, by means of readiness-to-serve charges or otherwise, there has been a row. Always it is the usual row. Certain kinds of public officials and would-be-public officials rise on their hind legs and emit the usual stuff compounded of "heartless corporation," "burdens of the poor," "toiling masses" and so on—much noise but utterly no knowledge on the subject.

Always it is assumed that deviation from the flat-rate system will favor "the rich" at the expense of "the toilers." Always it is assumed that persons and families of small incomes are the small users of gas.

Flat Rates Hit Small Incomes Hardest

As a matter of fact, small incomes and small gas bills by no means go together. Speaking generally, when a few exceptional individual cases are omitted, it may be stated that the poorer people in almost any community are the larger users of gas for domestic purposes. They are the people who live in the humbler surroundings, have the largest families and have need of gas, and use it, for the greatest variety of purposes. They are the people who will first reap direct benefit—lower gas bills—from equitably correct rate making.

Look for the regularly small users of gas under flat rate systems and you find: Occupants of handsome homes and apartments and kitchenette apartment dwellers who have few or no children and take most of their meals away from home; doctors and dentists who use a little gas occasionally in their

offices; various business, retail and otherwise, wanting an occasional gas fire. They are the customers who make use of gas service only as a occasional convenience, not as a prime daily domestic or business necessity. They use only a few hundred cubic feet of gas per month and frequently none at all. But their occasional "convenience" use entails as much "customer" expense per customer as regular use by the other customer does. Hence, a large part of the cost of gas service to these "convenience" users is borne by the customers who have the large families or use gas regularly, in their business.

Grand Rapids and Chicago Furnish Concrete Evidence

Recent surveys in Chicago, in Grand Rapids, Michigan, and elsewhere, have uncovered surprising evidence of how the "convenience" users are getting their gas service at the expense of the poorer people. In Grand Rapids there was a house-to-house canvass of typical residence districts—homes of mechanics and homes of well to do business and professional men—and of businesses and office buildings. The Chicago inquiry (not yet completed) has thus far analyzed monthly gas consumption by typical groups of working class gas users (gas company employees, members of the electrical workers union, L road employees, railroad engineers and firemen), monthly consumption by drug stores and dentists' offices in the occasional or "convenience" user class, and monthly consumption in typical residence districts.

In Grand Rapids, employees of furniture and other manufacturing plants had an average gas consumption of 2,305 cubic feet per month; among business and professional men (usually two in family) monthly consumption ranged from 1,500 cubic feet down.

Canvass of typical office building and retail business gas users showed:

	Kind of Business	Average Monthly Consumption
110	office building customers	587 cubic feet
25	groceries	840 " "
22	meat markets	801 " "
17	miscellaneous businesses	500 to 600 " "

Chicago Facts Refute the Demagogue

In the analysis of gas consumption by typical "convenience" users and by typical working class groups in Chicago (not yet completed at this date), the total consumption by each customer in each group for the whole year of 1922 is taken and from these totals monthly average have been ascertained, as follows:

No. of Customers		Average use of gas per month
1,052	Drug stores	1,168.71 cu. ft.
1,484	Dentists' offices	1,411. cu. ft.
2,062	Gas company employees	2,736 cubic feet
2,614	members electrical union	2,509 " "
2,780	"L" road employees	2,468 " "
153	Railroad engineers & firemen	2,434 " "

Even more striking are the results of a similar analysis of gas consumption by dwellers in apartments on Cornelia Avenue and Diversey Parkway, adjacent to Chicago's famous north shore "Gold Coast," and gas consumption by working people—laborers, janitors, teamsters, stock yards and packing house workers, etc.—in George, Fulton, Walnut, Chestnut, Sedgwick and Federal Streets and Union Avenue.

The following table shows the number of customers whose use of gas has been thus analyzed (again monthly averages for the whole year of 1922), character of dwelling, rents, and average use of gas per month:

No. of Customers	Character of Dwelling	Rent per Month	Average use of gas per month
67	1-3-room apartments	$55 to $85	658 cubic feet
37	3-4-room apartments	$70 to $100	1,224 cubic feet
26	4-5-room apartments	$75 to $115	1,322 cubic feet
8	4-6-room flats	$35 to $40	2,785 cubic feet
10	5-6-room flats	$18 to $22	2,417 cubic feet
12	5-6-room flats	$15 to $25	3,472 cubic feet
7	5-6-room flats	$18 to $20	3,448 cubic feet
32	3-5-room (front & rear)	$10 to $25	2,365 cubic feet
22	5-6 rooms	$25 to $40	4,153 cubic feet
39	6-7 rooms	$50 to $60	4,242 cubic feet

Grand Rapids has about 38,000 gas users. Of this number, in the month of the survey, 10,890 used less than 500 cubic feet each, divided as follows:

Using no gas	4,861
Using 100 cubic feet or less	4,020
Using 200 cubic feet or less	4,606
Using 300 cubic feet or less	4,018
Using 400 cubic feet or less	5,678
Using 500 cubic feet or less	6,029

But all of the 10,890 (the sum of the first figure and the last above) had full service at command and each caused as much "customer" expense (meter reading, bookkeeping, etc.), as any of the furniture factory and other industrial workers who had an average monthly consumption of 2,305 cubic feet of gas.

"All Aboard for Smokeless Town"

It is entirely safe to say that the conditions revealed, in Grand Rapids and in Chicago, are general throughout the country, especially in the larger cities. The careless spenders of the bridge club and the cabaret are numerically first among the beneficiaries of the flat rate system. Its chief victims are the hard. working, home keeping, family raisers. This unfair distribution of the costs of gas service keeps the price of gas higher than it need be and so restricts the use and usefulness of the clean, convenient, smokeless fuel in both the domestic and industrial fields.

(Continued on Page 140.)

As The Journal Views It

WHO PAYS THE TAXES?

At some time or other in every community served by a gas company or other public utilities, some politician or interested party will for one reason or another call upon the people to insist upon raising the taxes assessed against the property of the public service company. Every now and then we hear of committees appointed to institute investigations to determine whether or not taxes should be raised.

The people should not be misled by such propaganda. In the first place, there is no reason why the public service utility should pay more taxes than another industry. The spirit of fair play should prevail and should prevent injustice being done. On the other hand the people should know and understand that if the taxes are raised, the additional money must come from their own pockets.

From whom does the gas company or the public utility obtain its revenue, from whom does it derive its income? The people in the community pay for the service rendered them and the gas company has no other market but one and it is generally limited to a single community. Therefore, if the taxes are raised and made excessive, it only follows that the gas company must apply for an increase in rates and its request will have to be granted if it shows that it is not earning an adequate return on the capital invested.

So it will pay the people to see that taxes are kept reasonable. In general, out of every dollar that is collected by a public utility company from ten to twelve cents is spent for taxes and that is about the reasonable average for all public service companies throughout the country. If communities seek to increase the tax rate, then they themselves must pay for it.

FORESTALLING COMPLAINTS

"An ounce of prevention is worth a pound of cure." So reads an old adage, the truth of which has been proven in many instances and under all sorts of conditions. It is far easier to prevent something from happening, to provide means which will avoid injurious developments than to remedy the condition after it has come to pass. In other words much more can be gained from a plan which seeks to remove remote causes which might develop into harmful effects than from one which is concerned with remedying or counterbalancing bad results once they have occurred.

This applies particularly to complaints. Gas companies perhaps more than any other public utility company have to contend constantly with complaints. These complaints may be justified or they may not. Whatever their nature and however unfair they may be, it is necessary for each and every gas company to possess some sort of organization whose duty it is to take care of these complaints and to satisfy the complainants. Once the gas customer has a complaint, once he or she has had real trouble with gas appliances or gas service, an unfriendly state of mind is produced in the person which it is more or less difficult for the gas company to remove. The gas customer must be satisfied; if he is angry he must be mollified and he must leave the gas company office feeling content that he has been treated right and that his complaint is going to be adjusted to his satisfaction. Every manager of a complaint department of a gas company knows and appreciates that this is the prime function of his department and he also knows well that in some cases it is a very difficult matter to accomplish this result without the sacrifice of a good deal of one's self respect, besides the expenditure of considerable time and energy.

How much simpler would it be to arrange to remove the causes of potential complaints so that the complaints themselves never materialize? An ounce of prevention in eliminating any condition that might result in a complaint is worth more than a pound of cure in remedying the condition after the complaint has been made. Gas companies have in certain instances, realized the truth of this fact and have organized departments whose duty it is to ferret out all sorts of conditions and circumstances which might, in the future, give rise to complaints.

One gas company in particular, we are told, has instituted a system of inspection covering the entire

territory which it serves so that an inspector visits each and every customer at regular intervals. These inspectors are experienced in the operation and adjustment of gas appliances; they know how to make certain small repairs to gas heaters, gas burners of all kinds and they understand as well the function and operation of meters and have likewise a good knowledge of gas technology. These men travel around and visit the customers' homes and industrial establishments, inspect the various apparatus that is used and correct the faults before they can materialize into serious complaints. Incidentally, they have an opportunity to converse with the customer and by telling him their story, by emphasizing the service that the gas company is giving the consumers through them, they can also do much in promoting good will towards the company.

This system, we are told, is working well and it is something that each and every gas company should consider carefully because it apparently goes far towards removing that "bug-bear" of the gas company, the complaint.

INDUSTRIAL USE OF GAS AT BAYSHORE SHOPS OF SOUTHERN PACIFIC R. R. CO.

Charles W. Geiger

At the Bayshore Shops of the Southern Pacific Railroad Company, about six miles south of San Francisco, gas is piped through the various departments and is used for various purposes. Gas is used in torches for both annealing copper pipes and for burning off or sweating brass. The torch consists of a one-half inch pipe about four feet in length with a one-half inch by two inch reducing coupling and a piece of two inch pipe four inches long screwed into the coupling. The reducing coupling has a series of three-sixteenths inch holes for the purpose of admitting air to facilitate burning.

The operator simply inserts the two-inch pipe into the end of the pipe to be annealed the flame passing through the pipe and out the other end, annealing the pipe as it should be done (from the inside out). By this method annealing can be accomplished much quicker than by the usual method of holding the pipe over a fire.

All copper pipes are thoroughly annealed and overhauled each time a locomotive is shopped. The wisdom of doing this is shown by the fact that in over eleven years there has never been a failure to steam pipes leading to injectors.

The locomotive painter uses gas in burning off paint from sash and doors of locomotive cabs, and has increased the capacity of the operator greatly by its use.

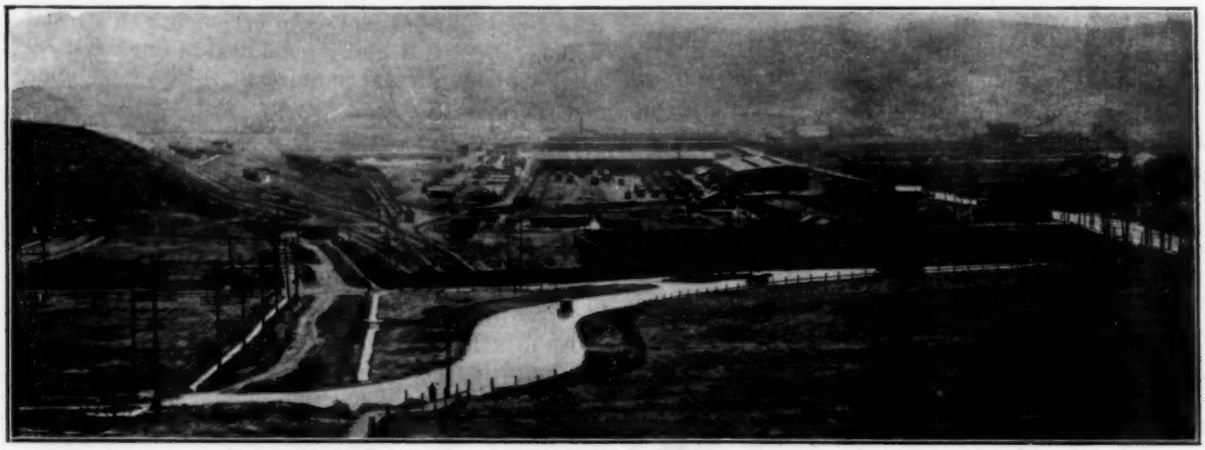
In the pipe shop there are two small gas burning forges for heating the soldering irons which take the place of the usual torch.

GAS THE SMOKELESS FUEL

(Continued from Page 138.)

When this system gives way to equitably correct rate making, when "Back o' the Yards" no longer pays for the gas service of the "Gold Coast" and the "convenience" users, then the gas bills of the family raisers and other regular users will be smaller. Increased use of gas will inevitably follow. Equally as inevitably, increased use and increased volume production will tend to cut manufacturing and distribution costs still further, and so tend to make smokeless gas fuel still more economically available for both domestic and industrial purposes.

Let this happen, with central station electricity eliminating smoke from railroad terminals and steam power plants, and the broadened opportunity to "do it better with gas"—and economically—in factory, shop and home, will promptly inaugurate the transformation of our smoke smothered industrial cities, each into a veritable smokeless town.



Southern Pacific R. R. Shops.

Every Day the King Dies

An address on advertising and the necessity for its continuity

Bruce Barton

The following address which was delivered at the recent convention of the N. E. L. A. in New York City contains some very pertinent remarks regarding advertising which apply to all public utilities including the gas industry. To get ahead, and getting ahead in modern business life connotes the proper use of advertising, means as some one aptly stated, "Keep On Keeping On." This Mr. Barton shows applies emphatically to advertising.

WHAT I have to say will be very brief, very informal, and will consist principally of two stories, which I think have a direct application to your business.

Must Constantly Repeat Story

The first concerns a member of my profession, an advertising man, who was in the employ of a circus.

It was his function to precede the circus into various communities and there to call at the newspaper offices and make sure that the notices would be flattering, and to put up upon the fence posts and the barns pictures of the bearded lady and the man-eating snakes, and, finally, to get in touch with the proprietor of some store and contract with him for the space on either side of the elephant to be used for advertising purposes in the parade.

So, coming to a cross-roads town one time, he found that there was only one store and the proprietor did not receive him enthusiastically.

Said the proprietor, "Why should I advertise? I have been here for twenty years. There isn't a man, woman, or child around in these parts that does not know where I am and what I sell and how I do business."

Churches Continuous Advertisers

The advertising man answered very promptly, because in our business if we hesitate we are lost, and he said to the proprietor, pointing across the street:—"What is that building over there?"

The proprietor said to him, "That is the Methodist Episcopal Church."

The advertising man said, "How long has that been there?"

The proprietor said, "Oh, I don't know; seventy-five years probably."

"And yet," said the advertising man, "they ring the church bell every Sunday morning."

What Happened to Joseph

My second story also has a religious flavor. It relates to a gentlemen named Joseph, now deceased. Those of you who were brought up on the Bible, may have found some account of his very remarkable business career in that book. Those of you who have not read that book or who do not have it in your libraries, may have heard of him through the works of Mr. Rudyard Kipling, because Mr. Kipling said this of Joseph, as you will remember:

"What shall doubt the secret hid
Under Cheops' pyramid,
Was that the contractor did
Cheops out of several millions,
And that Joseph's sudden rise
To controller of supplies
Was a graft of monstrous size
Worked on Pharaoh's swarthy civilians."

But the account of Joseph, in the Old Testament is much more complete and to his credit.

You remember that he left his country under difficulties and, coming into a strange country, through his diligence and intelligence, he rose until he became the principal person in the State, second only to the King. Then there comes in that story that I regard as one of the most amazing, one of the most staggering lines that has ever been written in business history, a line that I think ought to be engraved deep on the office wall of every man who has anything to do with public relations, because with no interruption, no explanation, the account which has just finished telling of Joseph's remarkable career (and where his private relations had all the good jobs in the Kingdom) goes on to say: "And Pharaoh died, and there arose in Egypt a new King which knew not Joseph."

Young Must Be Told Story

Now, gentlemen, I believe that that is the greatest sermon ever written on the subject of public relations.

When we gathered in this room this afternoon, there were in this country, in bed, sick, several thousand old men. It is perhaps indelicate for me to refer to that fact, but it is a fact; and we are grown up and we have got to face these things. On these old men you gentlemen collectively have spent a considerable amount of time and a considerable amount of money. It is to be supposed that you have made some impression upon them regarding your service and your purposes and your necessities; and in this interval while we have been sitting here, those old men have died, and all your time and all your money and whatever you have built up in the way of good-will in their minds, all those things have passed out with them.

In the same interval, in the same half hour, there have been born in this country several thousand lusty boys and girls, to whom you gentlemen mean

no more than the Einstein theory. They do not know the difference between a gas lamp and a stick of Wrigley's chewing gum. Nobody has ever told them that "Ivory soap floats," or that "children cry for Castoria," or what sort of soap they ought to use if they want to have "a skin that people would like to touch." Nobody has ever told them any of the other facts that are so vital in maintaining existence in these complex modern times.

Can't Sell Story and Quit

The whole job of giving to them all the things that they are going to need in order to be able to form an intelligent public opinion and to exercise an intelligent influence in the community has to be started from the beginning and done over again.

So the first very simple thing that I would say to you (and it is so simple that it seems to me it ought to be said at every convention of this kind) is that this business of public relations is a very constant business; that the fact that you told your story yesterday should not lead you into the delusion of supposing that you have ever told it. There is probably no fact in the United States that is easier to impress upon people's minds than the fact that Ivory soap floats; and yet the manufacturers of Ivory soap think it not inconsistent or wasteful to spend over a million dollars a year in repeating that fact over and over again.

Every Day the King Dies

It is a day-by-day and hour-by-hour business, gentlemen. Every day and every hour "the king" dies and there arises a new "king" in this country to whom you and all your works mean absolutely nothing.

Now, the second and very simple thing that it seems to me I might say to you is that in your dealings with the public, in what you write and say to it, you have got to be genuine.

When I came to New York a great many years ago, I had a lot of trouble with banks. I had great difficulty in finding any bank that would be willing to accept the very paltry weekly deposit that I wanted to make, but I finally found one, which was not as closely guarded as the others, and I succeeded for over a period of three years of being insulted by the teller every Saturday, and at the end of three years when I came to draw out my money, I had an audience with the vice-president who wanted personally to insult me.

Must Advertise Human Qualities

I said to myself, "If I live and grow old in this town, some day I think I would like to take a crack at this institution." And so, as the years passed, as they have the habit of doing, and I lived and grew older, one day a banker came in to us and said he would like to have us do some advertising for his bank. I said to him, "You go back to your office and shave off all the side-whiskers that are in your bank, and you take all the high hats and carry them out into the backyard of the bank, and you put them in a pile and you light a match to the pile and burn them up, beause I am going to advertise to people that are human, and it may be a shock to have them come in and find you as you are."

So we inserted an advertisement, "There is a young man in this town who is looking for a friendly bank; a bank where the officers will remember his name and where some interest will be shown when he comes in," etc.

It was very successful. It was too successful. It was so successful that we could not control it, and all over the country there broke out a perfect epidemic, a kind of measles, of friendly banks, bankers who had not smiled since infancy, and who never had had or needed an electric fan in their offices. They suddenly sat up and said, "Why, we are friendly!"

Must Cultivate Friendliness

Well, our bank dropped out. The competition was too keen. But it culminated, I think, in a letter which I saw and which was mailed by the president of a really very important bank in a large city of this country. I won't attempt to quote it verbatim, but it was to this effect:

"Dear Customer: As I sit here all alone in my office on Christmas evening thinking of you and how much we love you, I really wish that you and every other customer could come in here personally so I could give you a good, sound kiss." Well, that is a a trifle exaggerated, but the fact is this: If you don't feel these things, you can't make other people feel them. Emerson said, as you will remember, "What you are thunders so loud I cannot hear what you say." Unless there is back of this desire for better public relations a real conviction, a real genuine feeling that you are in business as a matter of service, not merely as a matter of advertising service; unless there is that, then it is very dangerous, indeed, to attempt to build public relations on any other ground.

Simple Story Most Effective

The third very simple thing, and the last thing that I suggest is this: In dealing with the public, the great thing is to deal with it simply, crisply and in language that it can understand.

Two men delivered speeches about sixty years ago at Gettysburg. One man was the greatest orator of his day, and he spoke for two hours and a half, and nobody in this room probably can remember a single word that he said. The other man spoke for considerably less than five minutes, and every school child at some time in his career learned Lincoln's Gettysburg address, and remembers it more or less all his life.

Many prayers have been uttered in the world—many long, fine sounding prayers—but the only prayer that any large majority of people have ever learned is the Lord's Prayer, and it is less than two hundred words long. The same thing is true of the Twenty-third Psalm, and there is hardly a Latin word in it. They are short, simple, easily understood words.

Asking an advertising man to talk about advertising at a convention like this is a good deal like asking a doctor to talk about health. I have listened to many such addresses and they are all about the

same. The eminent physician says "Drink plenty of water. Stay outdoors as much as you can. Eat good food. Don't worry. Get eight hours' sleep. And if you have anything the matter with you, call a doctor."

So I say to you that there is a certain technique about these things, and if you have anything seriously the matter with you, from a bald head—and many of you have very bald heads—to trouble with your public announcements, there probably is some doctor in your town who has made his business of that thing, and it may be worth your while to call him in.

But, in the meantime, and in this very informal and necessarily general talk, I say to you, "Be genuine, be simple, be brief; talk to people in terms and in langauge that they understand, and finally and most of all, be persistent."

Heating Water by Gas

Large Installation in Laundry For Producing Hot Water With the Aid of Gas

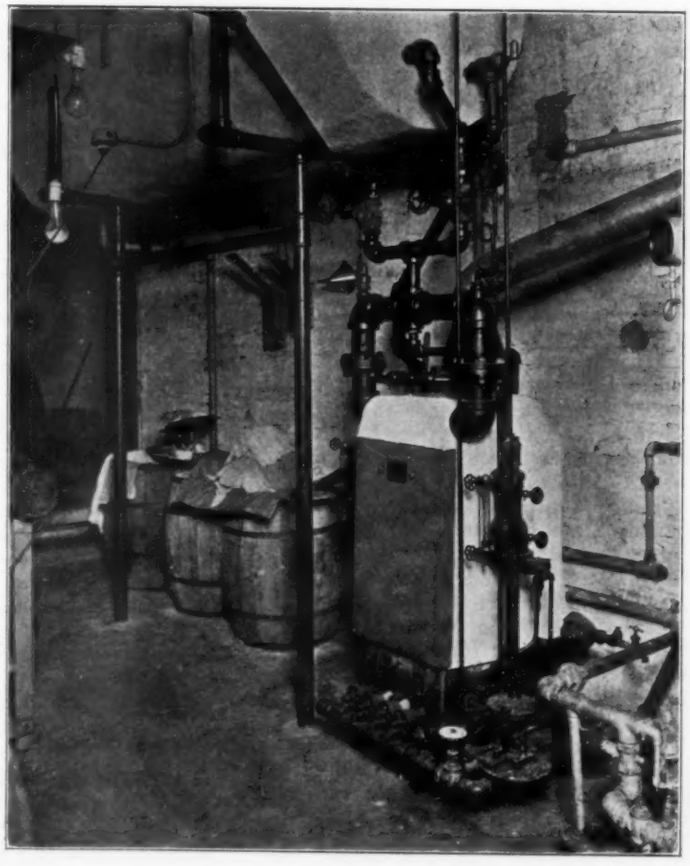
The attached photograph shows a gas installation in a laundry located in the city of Baltimore, Maryland. From April, 1917, to November, 1922, steam was supplied by a 6 H. P. high pressure gas boiler, and water was heated by injecting a steam pipe into a large barrel. However, the capacity of the laundry outgrew this rather crude method of generating of hot water and a rather unique installation, as shown, was installed.

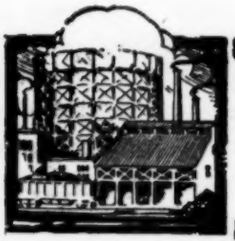
This was to install a four section steam boiler, connected to a 525 gallon tank as an indirect storage system. This was used in preference to the direct system because steam, which is often required in the wheels, would be available, when the steam boiler is used instead of the hot water boiler. The usual practice is to connect this size boiler to about a 200-gallon tank. The change in practice was based on the following considerations: The laundry in question works one shift only, giving approximately 14 hours for the hot water system to recuperate. While the daily demand is well over 525 gallons, the larger part of this demand is for water around 160 degrees F., or lower, so by heating the 525 gallons of water, over night, to 190 degrees F., the full daily volume of hot water could be obtained by mixing cold water with this until the desired temperature was reached. In other words, it was calculated that by having 525 gallons of water at 190 degrees F. on hand every morning, it would give a full daily supply when mixed with cold water to bring the temperature down to the desired point.

This practice has been justified by the subsequent behavior of the equipment. Outside of one or two minor changes made for the greater convenience of the operator, the equipment remained as installed. As may be seen from the photograph, the whole outfit makes a compact and efficient set up. The boiler was made as automatic as possible by equipping it with thermostatic control and a low water cut-off, in addition to its automatic feed, fuel control, etc. This gives two positive controls, namely, water temperature, steam pressure, and the safety feature guarding the boiler against failure of the water supply.

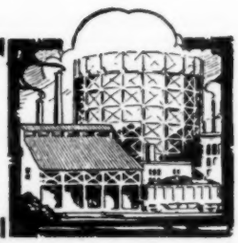
Hot and cold water supplied at about 40 pounds pressure is piped to the "heels," making the filling a much quicker operation than with the old gravity feed. Steam is also piped to the wheels for emergency temperature boosting. Boiler and tank were heavily insulated with asbestos to bring radiation losses down to a minimum. The outfit has proved admirable for this type of work, and has made it possible to more than double the output with much less time and attention, thus automatically reducing the cost per unit of work done.

From the gas company's standpoint, it is a good class of business, giving a very steady and constant load.





NEWS OF THE GAS INDUSTRY



Pacific Coast Gas Association Will Hold Meeting Sept. 11-14 at Del Monte

There are two events scheduled for California in September. The total eclipse of the sun, and a Gas Man's Convention. The first has been specially promoted, it is said, by the real-estaters of Southern California, the purpose being to distract attention from and offset the great movement of folks that are sure to proceed to the 30th Convention of the Pacific Coast Gas Association at Del Monte,

Preparations have gone too far to call off the natural phenomenon, but its purpose is so well understood that universal attention is now directed to Del Monte where the gas men will gather on September 11th to 14th. It looks like the Sun's eclipse will play to an empty house. Astronomers and skywatchers are all transferring their instruments and paraphernalia to the Gas Gathering in order to measure the extent with which it eclipses the conventions of the past.

The program provided by the Convention Committees and Del Monte itself is responsible for the interest and indications are that a large attendance will be present.

Del Monte is one of the beauty spots of California. It is the great outdoor playground suitable for any class of sport. Its 18,000 acres cover the entire Monterey peninsula, famous for scenic wonders. The entertainment committee possesses a wonderful opportunity to make it interesting for the members attending and every advantage has been taken for this purpose.

The session starts on Tuesday, September 11th. The morning will be the usual business meeting. In the afternoon this program will be taken over by the Accounting Committee. Two interesting subjects are to be presented:

First, Meter Shop Cost Accounting.

Second, The Keeping of Consumers' Account by Machine.

Mr. E. W. Hodges is Chairman of the Accounting Committee and with the able assistance rendered by its members has arranged a very instructive program.

The Wednesday session is assigned to the Technical Committee, Chairman F. L. Hall. The program prepared is very extensive and includes committee reports on subjects that are of immediate importance to the industry.

The final report of the Appliance Testing Code will be presented. The Natural Gas Committee will present the result of a study in the design of distribution systems and the flow of natural gas. The Unaccounted For Gas Committee has a report on the results obtained from a questionnaire including some very valuable information substantiating the application of a formula deducted by their study last year. The Consumers' Meter Committee will present the result of their study of this subject and add somewhat to their last three years' efforts on this work. The Committee on Works Connections has investigated the matter of Cast Iron Fittings and Flange Standards with the idea or co-ordinating the P. C. G. A. Standards with National Standards.

Other Committees and subjects will be presented so that a full day's program is assured.

The final day of the business session, Thursday, is given over to the Commercial Section. A report on the results accomplished by the Gas Appliance Society during the past year will be read. This organization of the retail trade in gas appliances is a new venture that is working great progress in stimulating interest in good standard gas appliances.

A feature of the program for this day is an address and demonstration by Mr. Al Crane, illustrating the proper methods in the sale of gas appliances. Mr. Crane is connected with the Furniture Exchange and is well qualified to handle the subject of good merchandising of Gas Appliances.

A new topic will be presented by Mr. Jas. Lynch. This deals with the problem of "Training Men for the Gas Industry." Mr. Lynch is a successful promoter of big business and a former manager of a co-operative movement in the Fruit Industry. Collaborating with Mr. Lynch in preparing this address has been a manager of an appliance store, a sales manager of a utility and an engineer of a gas company. As Mr. Lynch is a student of sales practice and a developer of sales energy it can be accepted that this subject will be properly presented.

The banquet will be the usual big event. An excellent musical program has been arranged. Mr. LeRoy Edwards will be the speaker of the evening. His subject will be Public Relations, and as attorney for the Southern Counties Gas Company he is well qualified to discuss the issue.

A clever entertainment will conclude the occasion, followed by a dance.

The outdoor play will be confined to a golf contest that has been arranged so that the novice will have the same chance as the veteran golfer. Many other outdoor sports are available at Del Monte and the members will find no end of fun to suit their varied tastes.

An exceptionally good attendance is expected as the membership has been rapidly increasing, fully 850 members are now on the rolls.

Gas men the country over fully realize the opportunities offered by attendance at conventions. It is the occasion when they receive first hand knowledge of the progress of the gas industry, when they meet with others engaged in the same business and exchange trade thoughts, when they might broaden their viewpoint on matters that are pertinent to the best interests of the industry. It offers opportunity for relaxation and gives their mental thoughts a chance to take stock of back progress. It offers a chance to mix with big men in the industry. It inspires men with enthusiasm and develops the proper optimism which is so essential to carry on the great industry in which they are engaged.

Coast gas men fully realize their duty to themselves, their association and the industry and so their interest is focused on Del Monte, California, from September 11 to 14.

Dealer Co-operation

Lucius S. Bigelow of Buffalo, New York, on his visit to the Pacific Coast went to Portland, Ore., gon, to inquire as to how the co-operation between the Gas Company and the gas appliance dealers had been effected, as he had advocated this very thing for many years and was interested to see his ideals put into operation in the far West.

A special meeting was called of the Gas Appliance Dealers' Association of Portland, Ore., for a dinner meeting, after which Mr. Bigelow addressed the people. On account of the lateness of the notice and the fact that this is vacation time many could not attend. However, twenty-seven sat down to dinner, representing, besides the Gas Company, gas furnace manufacturers and agencies, water heater agencies, gas range dealers, plumbers and heating contractors.

Mr. Bigelow expressed his surprise at seeing so many competitors meet around the same board, shaking hands in a friendly manner and expressing to him such a kindly spirit of co-operation as he had heard of but had not dared to take on faith.

Tampa Gas Co. Reduces Rates

Tampa, Fla.—Following an agreement between the city commission and officials of the Tampa Gas Co., the latter have announced an immediate reduction in the gas rates here, effective August 1. On that date the New Florida law allowing municipalities to regulate such utility rates will go into effect in this state. The new rate in Tampa will be $2.05 for 1,000 cubic feet gross, with a 20 percent discount for net payment of bills, which will make the rate $1.85 per 1,000 cubic feet. The reduction lessens the company's present income by approximately $20,000 per year.

Kinston, N. C., May Have New Plant

Kinston, N. C.—According to a report here last week Northern capitalists are interested in the establishment at Kinston of a gas plant, though no definite details of the project are as yet available. Kinston is one of the few cities of its size in the Southeast that does not have gas service. Mains were laid some time ago by the city for such a plant but it has never been established.

Tenney Service Convention

The fourteenth annual Tenney Service Convention will be held at the New Ocean House, Swampscott, Mass., Friday and Saturday, September 28 and 29.

The Convention Committee, composed of V. M. F. Tallman, Chairman; Cyrus Barnes, I. S. Hall, G. W. Hurn, J. M. Gibson and H. C. Hitchcock, is actively working on the plans which will guarantee the success of the convention.

It is expected that prominent men will address the convention during the opening day.

Gas Company Is to Pension Employees

Louisville, Ky.—Pensions for employees who have remained for a certain number of years in its service were announced by the board of directors of the Louisville Gas and Electric Company at its annual picnic at Summers Park.

Details of the award have not been worked out yet, but there are several men now employed by the company who probably will receive pensions.

Petitions Public Utilities Commission for "Service at Cost"

Chattanooga, Tenn.—The Chattanooga Gas Co., through its attorneys, is planning to file a petition with the Tennessee Railroad and Public Utilities Commission asking for "service at cost," according to an announcement by officials of the company. The action is being taken due to the fact that under the recent ruling of the commission the company will net less than 6½ percent return upon the valuation of its properties, which the commission has ruled is a fair return. The company values its properties at $1,650,000, and would net only about 4 percent under the present gas rates, and therefore will seek the "service at cost" plan order such as was issued some tme ago to the Memphis, Tenn., company for the same reason.

Milwaukee, Wis., Gas Rate Lowered

Milwaukee, Wis.—The gas rate of the Milwaukee Gas Light Co. was ordered reduced 5 cents 1,000 cubic feet, effective immediately after present meter readings, in an order signed by the Railroad Commission at Madison.

The range of prices under the new scale is as follows:

First 400 cubic feet regardless of whether there is any consumption or not, 50 cents.

Every 1,000 cubic feet up to total consumption of 6,600 cubic feet, 75 cents.

For additional consumption up to total consumption of 13,000 cubic feet, 70 cents a 1,000.

The lowest charge is 55 cents a 1,000 which, applies on all amounts in excess of 100,000 cubic feet.

Under the old rate the service charge was the same. Additional charges were 5 cents in excess of the new rates.

Reorganization and refinancing of the company is indicated in a federal court order just filed.

The company has been in the hands of receivers for three years.

The refinancing is reported to amount to between $2,000,000 and $3,000,000.

C. J. Jaffray and A. T. Rand, receivers, are ordered to obtain a new valuation of the plant, and to secure through the city council an extension of the franchise, which expires in 1930.

Court Rules Upon Utility Valuation

Milwaukee, Wis.—Present valuation of public utility properties may not be taken by the companies as a rate basis, the state Supreme Court has ruled.

The decision was handed down in the appeal of the Waukesha Gas and Electric Company from a ruling of the Railroad Commission and directly involves the valuation of public utilities property.

Stating that it does not attempt to lay down a formula for valuing public utilities, the Wisconsin court said that with the weight to be given each in determining a present fair value for establishing a rate basis, such classification would be as follows:

First—Actual cost of plant when the investment has been prudently made.

Second—Under normal conditions, cost of production now, less depreciation. (When conditions are abnormal, cost of reproduction new, less depreciation, should be fourth.)

Third—Going concern value.

Fourth—Working capital.

Fifth—Other elements of value which may be presented in a particular case.

Gas Appraisal Put at $10,691,842

Indianapolis, Ind.—The physical value of the property of the Citizens Gas Company, owned and leased, and used and useful in making gas, is $10,691,842, it was set out in an appraisal of the property submitted to the Public Service Commission by Earl Carter, chief engineer for the commission. The appraisal was made preparatory to the opening of a case wherein the commission will determine what the gas rate in Indianapolis should be.

The new rate is to be based on the valuation of the property used and useful as a gas utility.

The present rate of $1.15 a 1,000 cubic feet is being charged by order of the commission as a sort of agreed rate to stand until the commission should work out a more proper one. The agreement resulted from a situation precipitated some months ago when the commission refused to permit the company to increase rates to $1.25 but ordered a 90-cent rate. The company obtained an injunction in federal court enjoining the commission from enforcing the 90-cent order and the company was permitted to charge $1.20 until the commission should work out what the court held should be a more just rate than 90 cents.

Gas Bond Issue Fails to Carry

Chickasha, Okla.—In the election for the purpose of voting bonds to the amount of $225,000 for the establishment of a municipal gas plant, the voters of Chickasha turned the proposition down by a majority of 144.

This was one of the hottest bond elections ever held in the city and possibly the largest vote was cast. There were 1,002 expressed their sentiments at the ballot box, 429 for and 573 against the proposition.

Public opinion in the question was so divided that up until time the pools closed it was impossible to tell how the proposition was going.

Sale of Canton Gas Plant Is Authorized

Springfield, Ill.—Authority to purchase the Canton Gas and Electric Company, the Lewistown Electric Company, the Central Illinois Power Company and the Mattoon Clear Water Company has been granted the Central Illinois Public Service Company by the Illinois Commerce Commission.

First Outing Big Success

Baltimore, Md.—The Baltimore Gas Appliance & Mfg. Co., Baltimore, Md., recently held their first outing for all of their employees.

The men of all departments assembled with their families at 8:30 A. M. and went by boat to Altoona Beach, a very attractive picnic grove close to Baltimore.

Handsome prizes were awarded for the many games and events which were arranged by the Committee.

The Girls' over-all race attracted a great deal of attention. Twelve beautiful young ladies ran down altogether and got into over-alls and made a hurried finish.

Another attractive race was the Men's dressing race. A pile of women's clothes was put down at a given point and each man had to get a full costume of dress and hat. First one over the line fully dressed was the winner. Strange to say, there was only one man who knew how to put them on, the balance of the contestants never finished the race.

The Married Ladies' race proved an obstacle, for although it was arranged that the married ladies should run for a given point and pick out their own husbands, each

First Annual Outing of Employees

one, for some unknown reason, picked out another man.

There were many other races; among those were the Children's races and the Young People's races.

After the games were over, everyone made a bee-line for their tables and enjoyed the contents of lunch baskets which were very much in evidence.

The afternoon was given over to a Ball Game for which a cup had been donated by J. D. Taylor, to be known as the Taylor Cup, and to be played for annually. The teams were made up from the Mounting, Assembling and Shipping rooms and the opposing team from the Foundry, Grinding Room and Enameling Plant.

The young blood in the Mounting Room proved too much for the Moulders and the final score was —16-1.

After the game we all enjoyed dancing and the various amusements furnished by the picnic grounds, until the return trip at 6:30 P. M. for Baltimore.

The members of the committee in charge of the outing were: T. F. Schwaab, John Timmerman, J. Apple, C. R. Warderell, Earl McGee and J. D. Taylor, St., as chairman.

Gas Company 52 Years Old

Ottumwa, Ia. — Seventy-five year ago, in the little settlement on the banks of the Des Moines river that was destined to become the city of Ottumwa, gas was unknown. Those were the pioneer days of huge stone fireplaces extending entirely across one end of the small log cabin and furnishing not only the heat for cooking and warmth, but also, together with the feeble, home-made, tallow candles, the light beside which the family circle spent the hours between sunset and bedtime.

In the era of the sheet-iron kitchen stove, oil lamps and other up-to-date home equipment, before the advent of gas, little was heard, and less believed, of the rumors which came from the seaboard and New England states, about the "magic flame" which was then used for lighting purposes in the east.

Even in 1871, when the Otumwa Gas Light Company was incorporated and began to solicit customers, gas was looked upon as an evil spirit and the gas meter a "box of magic" manipulated by conjurers. The organizers, A. E. Swift, William T. Whitla and Nelson O. Swift, experienced many hardships during the first few years the company was operated.

The number of employees of the Ottumwa Gas Company in 1871 was twenty and today there are thirty-three people engaged in supplying the city with gas. On June 12th C. S. Davis, superintendent of distribution, completed his twentieth year of service and several other employees have served more than a decade with the company.

The growth of this public utility is easily seen in comparative statistics on the production and storage capacity and distribution system. The original plant consisted of two coal gas benches of five retorts each and one bench of three retorts, and a holder capacity of 25,000 cubic feet. Today there are six coal gas benches of six retorts each, two 6-foot, 6-inch water gas sets and a relief holder capacity of 100,000 cubic feet and storage facilities for 400,000 cubic feet, or sixteen times as much as when the company started. The daily output is approximately 400,000 cubic feet. The distribution system has grown from a few blocks of mains in 1871 to fifty-five miles of different-sized mains which cover approximately the whole city.

It is interesting to note that up until 1916 a portion of the gas main supplying West Second Street was of the old wooden pipe put in when the company first began operating. This section of main was nothing more than hollow maple logs, joined together and seemingly very well preserved. As wooden mains are very rare, a short section was removed as a curiosity and can be seen at the company office.

It is of interest to note that the original franchise set the rate at $5 per thousand cubic feet in 1870, or more than three times the present charge.

Dividends Declared

The Colorado Fuel and Iron Company declares its regular quarterly dividend of $2 a share, payable August 25 to stock of record August 10. No dividend on common was considered.

Pacific Gas and Electric declared the regular dividend of $1.50 on first and original preferred stocks payable August 15 to stock of record of July 31.

Baltimore Gas Appliance & Mfg. Co.

Hibbing's Gas Plant to Open September 1

Hibbing, Minn.—Hibbing's new gas plant will be in operation by Sept. 1, according to Con Kenney of Dubuque, Iowa, who is in charge of its erection here.

The plant will have six times the capacity of the present plant and will be capable of supplying gas to every resident of the city that desires it, Mr. Kenney said. More gas can be made by the new plant in six hours than the old plant can manufacture in twenty-four.

Queens Gas Co. Obtains Far Rockaway Site

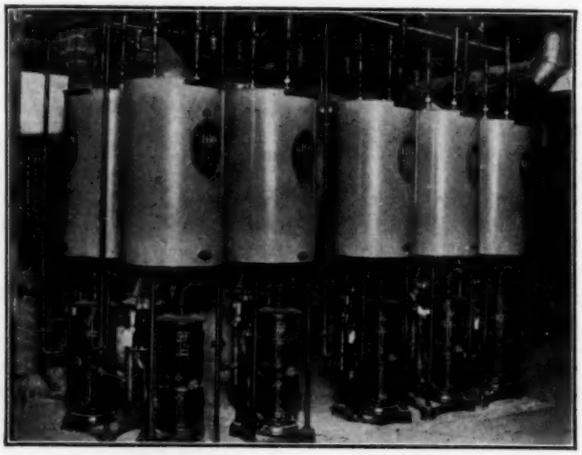
The Queens Borough Gas and Electric Co., Far Rockaway, N. Y., Carleton Macy president, has purchased the plot containing two and three-story frame store and flat buildings adjoining the present building of the Queens Borough Gas and Electric Co. Plans have been drawn for a twelve-story office and showroom building covering the entire plot, which will have a frontage of 150 feet. The entire building will be occupied by the Gas and Electric Co., and will house their various departments, including executive offices, rest rooms, recreation floors, auditorium and wholesale and retail showrooms.

Public Service Incorporation

Rodney J. Barwell, Roy C. Hecox and Edgar McComb, announced as incorporators for the $100,000 concern to be known as The Public Service Company of Colorado, to engage in gas, electric, steam for fuel and utilities. Added to the list of incorporators are E. H. Johnson, William P. Lehrer, Charles P. Wedlum, Thomas P. Lyon and C. E. Weger, of New York. It is understood that this corporation will handle the $12,000,000 power plant being built by the Cities Service Company at Boulder Lake, Colorado, with offices in Denver and at the Western Light and Power Company, Boulder, Colorado. The new plant, when completed, will serve the Denver Gas and Electric Light Company with electricity and cities for miles around the plant, and because of an unlimited supply of water the year round, coal mines all about, and exceptional railroad facilities, modern equipment throughout, this should prove to be the banner electrical power station of all places.

Gas Displaces Coal and Oil for Heating Water

The picture shows a battery of Lion Storage Heaters which are supplying the hot water to six apartments in a six-family house at Dorchester, Massachusetts. This house was heated with coal and



the hot water supplied by a 150-gallon storage tank, which was heated by a brass jacketed coal heater. Because of the difficulty in getting coal last winter and the cost of same, the owner installed an oil burning apparatus to replace the coal in the house heating plant. He then found that he could dispense with the services of the janitor if a satisfactory method of heating the water was found. The oil burner was not practical and the owner presented his problem to J. Joseph Callahan, who has charge of the appliance sales at the Dorchester branch of the Boston Consolidated Gas Company. The picture shows how Mr. Callahan solved the problem. These heaters have now been in use for about five months. Each tenant pays for the gas burned in the heater, which supplied his apartment, and although previously hot water was supplied without cost, there has not been any complaint from this source as the service has so improved, and they have steaming hot water at all times, which was not so with the system which was replaced.

Gas Delegates Meet

Los Angeles, Cal.—A large delegation of gas utility representatives, 400 strong, assembled recently at the annual Southern California dinner and meeting of the Pacific Coast Gas Association. Delegates came from Tacoma, Seattle, Portland, San Francisco, Stockton, San Diego and other coast cities participated in the gathering.

The speaker of the evening was L. N. Whealton, ex-Mayor of Long Beach, who addressed the gas men on "The Duties of a Public Utility." Charles H. Dickey, president of the American Meter Company of New York, also spoke.

A medal for the best technical paper read at the last annual convention was awarded to Arthur F. Bridge, rate engineer of the Southern Counties Gas Company. William Baurhyte, of the Los Angeles Gas and Electric Corporation, made the presentation speech.

Many of the gas fraternity members who have been in the city for several days met Friday afternoon under auspices of the Gas Research Council of the Pacific Coast Gas Association. At this meeting the matter of economies of gas manufacture and distribution were discussed. The Gas Research Council is the outgrowth of the body formerly known as the Joint Committee of the California Railroad Commission. The council's engineer is W. M. Berry, formerly with the Bureau of Standards, Washington, D. C.